

CAN WE SPEAK ABOUT TRANSITION TO GREEN ECONOMY IN ROMANIA?

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ABSTRACT: *Climatic changes and increasing needs of resources, in many cases incapable to satisfy the demand, have led to rethink the way of achieving economic growth, the concept of sustainable associated with the development trying to capture the concern that the present economic development does not bring any harm to the development opportunities of future generations. Romania, a member state of the European Union, recognizes the need for such an approach, ensuring a sustainable development and the transition to a green economy or circular economy being more and more frequently circulated or even being the object of assumed strategies. The current paper, based on data provided by the National Institute of Statistics, tries to capture Employment in two economic sectors the evolution of which should be in opposition if we consider the 'Green' criterion: Mining and quarrying – where operating, processing and utilization technologies are carbon-intensive, which is why there is a restriction of the dimensions of this sector; Water supply: sewerage, waste management and remediation activities are considered green activity, providing green jobs.*

KEY WORDS: *sustainable development, green economy, green jobs.*

JEL CLASSIFICATION: *J21, L71, L72, L95, O15, O44, Q01.*

1. ROMANIA'S APPROACH TO 'GREEN ECONOMY'

Although the planet has long since begun to show signs of irresponsible production and consumption, huge quantities of waste and its mismanagement, the exploitation of even greater amounts of resources and the lack of efficiency in their use, the production of energy and heat based on fossil fuels, the unsustainable consumption of goods and services, economic activities generating high emissions of toxic gases (e.g. road transport by petrol or diesel vehicles, etc.) or other forms of pollution, have caused and are causing a degradation of the environment which reduces its ability to regenerate itself on a daily basis. The consequences are represented by

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climate change, global warming, biodiversity loss, extreme natural phenomena (drought, floods, violent storms, typhoons, etc.) that produce significant human, material and economic losses, while exposing the population to stress and endangering health amid rising temperatures, water scarcity, soil pollution, food reduction (poorer crops, lower fish quantities, etc.). Against this background, green economy, circular economy or eco-innovation are just a few phrases frequently used when talking about the challenges of finding effective solutions to ensure sustainable economic development without harming the 'health' of the environment.

According to the UN Environment Program (UNEP), green economy is “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”. If in economic terms, the transition to green economy requires increased use of green technologies and production processes, in terms of the labor market, green economy involves a series of transformations aimed at changes not only in terms of the level of employment, but also in terms of its structure and the content of work.

Thus, even if the restriction of polluting economic activities has the effect of a decrease in employment due to a reduction in the demand for certain jobs, one will also witness a development of green economic activities (renewable energy, ecological agriculture, construction, transport based on electric vehicles, etc.), the demand for labor in these fields imposing either the emergence of new skills (example: installer of photovoltaic panels or energy auditor), or an increase in the demand for already existing jobs (complemented by green skills for example: bus driver who will have skills in driving electric buses, electrician specialized in the field of renewable energy).

Romania is among the states which have expressed concerns about the degradation of the environment, declaring itself concerned with finding the most effective ways to ensure a long-term sustainable development. A number of documents and strategies are currently approved and being implemented (National Competitiveness Strategy 2021-2027, National Strategy on Circular Economy, National Strategy for Employment 2021-2027, National Strategy for Green Jobs 2018-2025, National Strategy for Smart Specialization 2021-2027, National Strategy for Research, Development and Innovation, Digital Agenda, Industrial Policy of Romania, etc.) which have as objective the increase of the competitiveness of the national economy, the areas of intervention in the fields of economics, research and development, education, labor market, public institutions and regulations aiming to ensure a sustained, inclusive economic growth based on a low-carbon emissions that ensures a healthy environment for future generations, where the human factor is the most important determinant of economic growth and well-being.

A series of initiatives can be mentioned as contributing to the improvement of the sustainability of the Romanian economy, by stimulating the production and consumption of green energy at the expense of energy based on the consumption of fossil fuels, the development of circular economy or efficient waste management. Thus, the ‘Casa Verde’ (Green House) program started in 2009 by the Environment Fund Administration, consists of financing 1) the purchase and installation of photovoltaic panel systems which use renewable and non-polluting energy sources, in order to produce electricity to be used by consumers connected to the national power

grid (www.cfunciara.ro); 2) thermal insulation of the external walls and internal insulation of the roof for new and existing single-family homes. The beneficiaries of the program are both individuals and legal entities (administrative-territorial units, public institutions, non-governmental organizations) (www.afm.ro). Another initiative that relates this time to the circular economy and waste management is the creation of the legal framework conducive to the efficient management of packaging (for example, Law no. 249/2015 on how to manage packaging and packaging waste or G.D. no. 1.074/2021 on the establishment of the guarantee-return system for non-reusable primary packaging).

Focused exclusively on the assessment of the current size of the green economy in Romania from the perspective of green jobs and the identification of determinants, the National Strategy for Green Jobs 2018-2025 was adopted (HG nr. 594/2018) with the aim of setting strategic priorities (materialized in objectives, actions and principles), finding responsible institutions, as well as ways to monitor the progress made in this sector.

Unfortunately, if one analyses the evolution of the employed population in the environmental goods and services sector (www.ec.europa.eu) in the years following the approval of the Strategy, one can notice an increase in the value of the indicator in 2019 (the year immediately following the adoption of the strategy) from 154,183 full-time equivalent (FTE) to 160,539 FTE, followed by a considerable decrease in 2020 to the value of 142,429 FTE (a value lower than all other values recorded before the adoption of the Strategy, according to data presented in Eurostat statistics). It is interesting to see the point of view of the governors regarding this situation, from the perspective of the factors which brought about these values, as well as the proposals for new measures to be included in the Action Plan for the implementation of the National Strategy for Green Jobs 2018-2025 or the proposal to amend existing measures (although the Strategy stipulates the obligation to carry out an annual Monitoring and Evaluation Report of the implementation of the National Strategy for Green Jobs 2018-2025, these cannot be found on the official website of the responsible ministry (Ministry of Labour and Social Justice) or of any another authority.

2. RESEARCH METHOD

In Romania, the National Institute of Statistics (INS), an institution in charge with official statistics, groups the economic activities carried out at the level of the national economy into the following categories:

- Agriculture, forestry, fishing;
- Industry with the following subgroups:
 - Mining and quarrying;
 - Manufacturing;
 - Electricity, gas, steam and air conditioning supply;
 - Water supply; sewerage, waste management and remediation activities;
- Construction;

- Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods;
- Transport, storage and communications;
- Financial intermediation;
- Real estate, renting and business activities;
- Public administration and defense; compulsory social security;
- Other activities of national economy.

Starting from this classification and from the relevant literature on green jobs, this approach aims to confirm the results of the research carried out at European and global level, according to which, transition to green economy will determine changes on the labor market in terms of employment, meaning diminishing/phasing out existing jobs, alongside creating new jobs with new skills or skills that are in high demand due to the expansion of industrial green processes and production or delivery of products and services which contribute to preserving and restoring the environment. In this respect, two economic activities have been chosen for analysis as they are considered to be in opposition in terms of environmental impact: *Water supply; sewerage, waste management and remediation activities* – considered green activity, i.e. an activity that not only does not negatively impact the quality of the environment, but contributes to its conservation and restoration; at the opposite pole, *Mining and quarrying* – in which exploitation, processing and operation technologies are important pollution factors, which is why a reduction of the dimensions of this sector is expected.

The selection of the two activities also took into account the fact that, despite other economic activities highlighted in the classification, they also contain, in different proportions, activities, processes, technologies, occupations which can be considered *green*, and the current Romanian statistical system does not yet allow a differentiation of them in terms of what the specialized literature considers to be green or non-green (for example, in the activity of Electricity, gas, steam and air conditioning supply, the statistical data take into account both the production of electricity based on fossil fuels and the production of renewable electricity (hydro, solar, wind, etc.); similarly, if we consider the Transportation sector, the employment statistics include both the occupation of a bus driver on fossil fuel (gasoline) – considered a non-green job, as well as the occupation of electric bus driver – which is a green job.

3. DIMENSIONS AND STRUCTURE OF EMPLOYMENT AT THE LEVEL OF THE ECONOMIC ACTIVITIES UNDER ANALYSIS

A first step in highlighting the dimensions of employment will be achieved by tracking its evolution over 10 years (2011-2020), drawing a comparison between the average number of employees within the two economic activities under analysis.

Table 1 and Figure 1, respectively, for the analyzed period 2014-2020, show a constant decrease in the average number of employees in Mining and quarrying, in parallel with an uninterrupted increase in the average number of employees in Water supply, sewerage, waste management and remediation activities. If in terms of water supply, sewerage, waste management and remediation activities, the increase is 3.32%

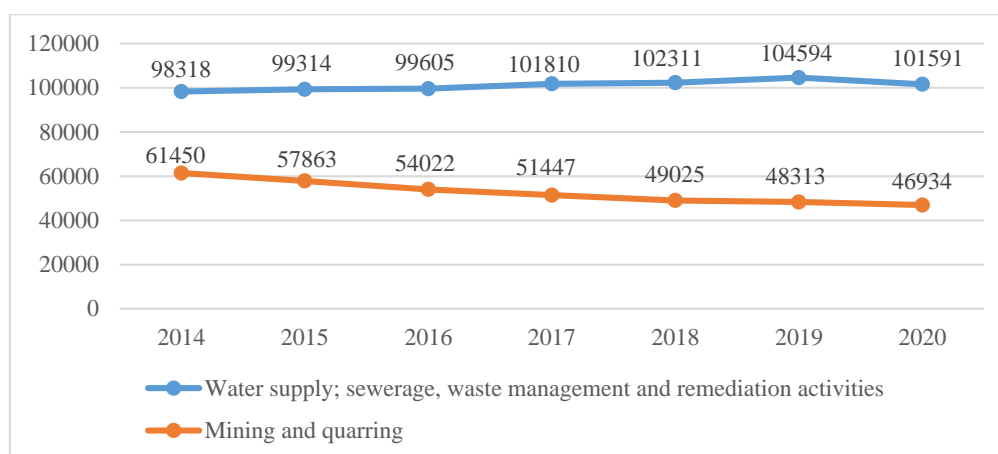
(reference year 2011), in Mining and quarrying, the decrease was 23.62% (same reference year 2011).

Table 1. Average number of employees

	2011*	2012*	2013*	2014	2015	2016	2017	2018	2019	2020
Water supply; sewerage, waste management and remediation activities	64	64	62	61450	57863	54022	51447	49025	48313	46934
Mining and quarrying	97	100	99	98318	99314	99605	101810	102311	104594	101591

Source: National Institute for Statistics, Statistical Yearbook of Romania 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

* for period 2011-2013, data to be read as thousands of people



Source: National Institute for Statistics, Statistical Yearbook of Romania 2015, 2016, 2017, 2018, 2019, 2020, 2021

Figure 1. The evolution of the average number of employees in Romania between 2014 and 2020

As far as the evolution of the average number of employees at the level of the component activities of Water supply; sewerage, waste management and remediation activities is concerned, the situation is presented in Table 2.

Table 2. Average number of employees in Water supply, sewerage, waste management and remediation activities

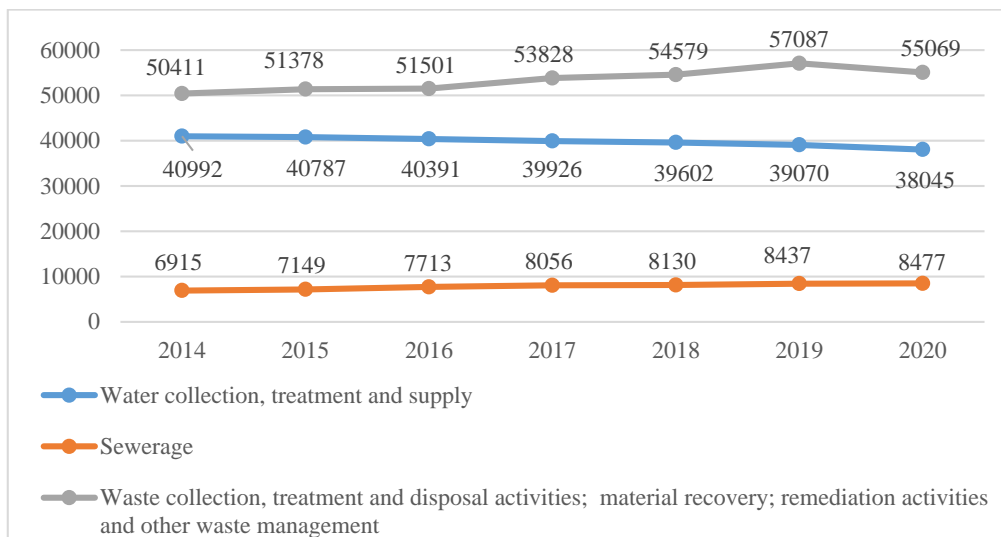
	2011*	2012*	2013*	2014	2015	2016	2017	2018	2019	2020
Water	40	41	41	40992	40787	40391	39926	39602	39070	38045

collection, treatment and supply										
Sewerage	6	7	7	6915	7149	7713	8056	8130	8437	8477
Waste collection, treatment and disposal activities; material recovery; remediation activities and other waste management	51	52	51	50411	51378	51501	53828	54579	57087	55069

Source: Institutul Național de Statistică, Anuarul Statistic al României 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

* for the period 2011-2013, data reads thousands of people

The upward evolution of the average number of employees in Water supply, sewerage, waste management and remediation activities sector is due to (table no.2 and graph no.2) the larger increase in the number of employees in the field of Waste collection, treatment and disposal activities; material recovery; remediation activities and other waste management, as well as those in Sewerage, thus compensating for the decrease recorded at the level of Water collection, treatment and supply.



Source: Institutul Național de Statistică, Anuarul Statistic al României 2015, 2016, 2017, 2018, 2019, 2020, 2021

Figure 2. The evolution between 2014 and 2020

Analyzing the evolution of the number of employees in Mining and quarrying, the highest proportions of employees can be found in Extraction of raw petroleum and

natural gas, Mining of coal and lignite respectively; at the opposite pole, the lowest number of employees can be found in Mining support services activities (table 3).

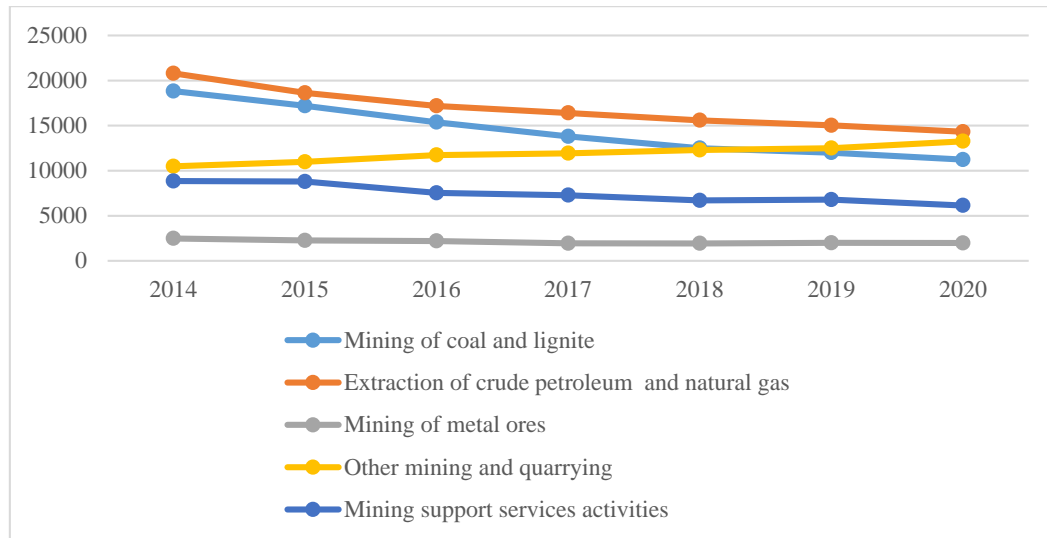
Table 3. Average number of employees in Mining and quarrying

	2011*	2012*	2013*	2014	2015	2016	2017	2018	2019	2020
Mining of coal and lignite	22	21	20	18830	17194	15373	13809	12503	12003	11228
Extraction of raw petroleum and natural gas	23	23	22	20805	18636	17188	16409	15590	15030	14320
Mining of metal ores	3	2	3	2484	2258	2195	1937	1935	1994	1974
Other mining and quarrying	9	10	9	10484	10982	11733	11933	12299	12495	13267
Mining support services activities	7	8	8	8847	8793	7533	7278	6698	6791	6145

Source: *Institutul Național de Statistică, Anuarul Statistic al României 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021*

* for the period 2011-2013, data reads thousands of people

The decrease recorded at the level of the average number of employees in Mining and quarrying is due to the decrease in the number of employees in all the component sectors (compared to 2011, the decrease in the number of employees in Mining coal and lignite was of 40.37%, while in Extraction of raw petroleum and natural gas it was of 31.17%), except for Other mining and quarrying activities (with recorded increase of 26.54% in the same reference year).



Source: Institutul Național de Statistică, *Anuarul Statistic al României 2015, 2016, 2017, 2018, 2019, 2020, 2021*

Figure 3. The evolution of the average number of employees in Mining and quarrying between 2014 and 2020

If we extend the analysis to the employment structure in these fields, it can be observed that:

- from a gender perspective, the predominant workforce is represented by men (again confirming the results of other studies and researches that have taken into account areas of activity considered "green", or have analyzed green jobs at the level of some states (IRENA, 2019; OECD, and Cedefop, 2014); the employment gap between women and men was even the subject of a study conducted by the International Renewable Energy Agency (IRENA) aimed at drawing up some guidelines intended to reduce these discrepancies (IRENA, 2019);
- if the employment status is taken into account, the predominant workforce is represented by employees (with proportions of over 90% of the labour force – only in the field of Water supply; sewerage, waste management and remediation activities in 2020 it decreased to 87%; the next place, but without exceeding 9.5% was occupied by self-employed, followed by contributing family worker (with percentages not exceeding 2.8%) and employee;
- employment by ownership type of working place point out in the case of Water supply; sewerage, waste management and remediation activities a prevalence of the private property compared to the public property, the gap between the two forms of ownership being very small; if the labor force within the component activities is analyzed, then it can be seen that in the case of private properties the highest values are in Waste collection, treatment and disposal activities; material recovery; remediation activities and other waste management, in parallel with a superiority of the public property as regards labour force in Water collection,

treatment and supply; in Mining and quarrying, most of the workforce can be found in companies with private capital; however, an analysis by component activities reveals close proportions in terms of the workforce within state-owned firms in Mining in coal and lignite and the labor force of private firms within the Extraction of crude petroleum and natural gas, and other mining and quarrying activities respectively (with percentages ranging from 22% to 25% of the total workforce);

- the level of training is predominantly average in both fields of activity analyzed (studies on green jobs have concluded that most of them "use high-level abstract skills significantly more than non-green jobs "[...] and "exhibit higher level of education, work experience and on-the-job training" (Consoli, et. al., 2015; European Commission).

4. RESULTS AND CONCLUSIONS

The analysis of the series of statistical data provided by the National Institute of Statistics of Romania confirms, at the level of our country, the trends that want to be recorded globally in terms of 'the future' of carbon-intensive activities versus green economic activities, meaning that if one considers strictly employment one can observe an increase in the number of employees in fields/sectors/economic activities considered 'green' compared to non-green ones. Starting from the way of structuring the activities of the national economy according to the National Institute of Statistics, in this case Water supply was chosen as a relevant activity from the point of view of the 'weight' criterion; sewerage, waste management and remediation activities, in parallel with Mining and quarrying, an activity considered polluting. The analysis of the data series from 2011-2020 have revealed that the trends are constantly increasing in the case of green activity, and decreasing in the case of non-green activity, respectively without noticing major changes in the patterns reported after the approval of the National Strategy for green jobs 2018-2025, a fact which is also due to the extremely short period that has passed since its implementation. It is interesting to see, having previously analyzed this strategy, what the consequences will be in terms of employment (quantitative and structural) of this government initiative, thus highlighting the concern that Romania becomes a sustainable economy in the shortest possible time, in which competitive, intelligent and green economic sectors can become a priority in development not only at declarative level.

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